

# PATENT SPECIFICATION

DRAWINGS ATTACHED

Inventor: ARMIN KORM

L067,426



L067,426

Date of Application and filing Complete Specification: Aug. 11, 1964.

No. 32713/64.

Complete Specification Published: May 3, 1967.

© Crown Copyright 1967.

Index at acceptance: —E2 F(1T1, 3E, 3F)

Int. Cl.: —F 16 c

## COMPLETE SPECIFICATION

### Improvements in and relating to Ball Joints more particularly for Motor Vehicles

5 We, VEB WISSENSCHAFTLICH-TECHNISCHES ZENTRUM AUTOMOBILBAU HOHENSTEIN-ERNSTTHAL, of 9, Am Bahnhof, Hohenstein-Ernstthal, Germany, a Corporation organised under the laws of Eastern Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The invention relates to ball joints for use as supporting and guiding joints for the wheel suspension of motor vehicles.

15 Ball joints are known wherein a space is formed between a supporting spherical shell and the bearing housing for a compression spring which on the one hand indirectly or directly contacts the supporting spherical shell and on the other hand is supported against the bearing housing which is provided with an annular indentation against which the supporting spherical shell is additionally supported. In the case of these known ball joints, a lubricant space is formed about the bearing housing. The problem of space economy plays a subordinate role in these ball joints. However, due to the arrangement of the space between the bearing housing and the spherical shell for the spring and the additional lubricant space, these joints require an amount of space which is frequently not available in motor vehicles.

30 Ball joints are also known wherein shell-shaped joint caps centre the spherical bolts in the bearing housing. Ball joints of this type generally require careful machining at their interior faces, and it is also necessary for the bearing housing to be made to a high degree of precision in order to ensure complete contact on all sides by the spherical shells in the bearing housing, and to avoid

the balls being crowded. The reason why this is necessary is, more particularly, in order to achieve centering and a firm seat of the spherical shells in the bearing housing, and to obviate rattling of the spherical shells. 45

The invention consists in a ball joint comprising an upper housing, and a lower housing having a central opening through which a ball extends into the space between the upper and lower housings, a lower bearing support, carrying a lower bearing member which engages the ball, being disposed between the lower housing and the ball, the lower bearing support being axially displaceably guided in the said opening, an annular spring element being disposed between a portion of the lower bearing support and a portion of the lower housing in such a manner that a force is exerted which maintains the lower bearing member in engagement with the ball, an upper bearing support carrying an upper bearing member which engages the ball being provided in the upper housing. 50 55 60 65

The lower housing is preferably provided with a groove in order to accommodate a dust sleeve or cover.

By virtue of the invention, a ball joint comprising predominantly drawn sheet metal parts and suitable for mass production is achieved at low manufacturing costs. It admits of greater tolerances of centricity for the bearing members and their support elements. Accurate guiding of the ball is nevertheless ensured. 70 75

In order that the invention may be more readily understood, reference is made to the accompanying drawing, which illustrates diagrammatically and by way of example, one embodiment thereof in longitudinal cross-section. 80

The ball joint comprises an upper housing

[Price 4s. 6d.]

1 drawn from sheet metal, in which the ball  
2 is guided by two bearing members 4 and  
6. The bearing members 4 and 6 are  
located in bearing supports 3 and 5  
5 and may be pressed in as prefabricated bush-  
ings, injection moulded into the bearing sup-  
ports, pressed in in powder form or manu-  
factured by any other suitable method. The  
upper bearing support 3 with the upper bear-  
10 ing member 4 is supported by its outer collar  
surface against the shoulder of the bearing  
housing, the precise position of the upper  
bearing support 3 being determined via the  
ball 2 by the lower bearing support 5 with  
15 the lower bearing member 6. Depending on  
the position which the centre of the spherical  
surface, and hence the elements 5 and 6 have  
taken relative to a portion 9 of the upper  
housing 1, due to the manufacturing  
20 tolerances, the upper bearing support 3 with  
the upper bearing member 4 becomes centred.  
In order to prevent skewing of the lower  
bearing support 5 when lateral forces are  
transmitted, it is additionally guided by a  
25 lower housing 7. The latter is centred during  
assembly by the lower bearing support 5 and  
is then connected detachably or fixedly to  
the upper housing 1.

30 The loading of the ball 2 is applied by  
means of a spring element 8. The latter is  
supported on the one hand against the  
shoulder between the two guiding diameters  
of the lower bearing support 5 and on the  
other hand against the lower housing 7. The  
35 lower housing 7 is provided with a groove

10 for the retention of the usual dust sleeve  
11. The interior space of the bearing housing  
is packed with grease.

#### WHAT WE CLAIM IS:—

1. A ball joint comprising an upper hous- 40  
ing, and a lower housing having a central  
opening through which a ball extends into  
the space between the upper and lower hous-  
ings, a lower bearing support, carrying a lower 45  
bearing member which engages the ball, being  
disposed between the lower housing and the  
ball, the lower bearing support being axially  
displaceably guided in the said opening, an  
annular spring element being disposed be- 50  
tween a portion of the lower bearing support  
and a portion of the lower housing in such a  
manner that a force is exerted which main-  
tains the lower bearing member in engage-  
ment with the ball, an upper bearing support 55  
carrying an upper bearing member which en-  
gages the ball being provided in the upper  
housing.

2. A ball joint as claimed in claim 1, where- 60  
in the lower housing is provided with a groove  
to accommodate a dust sleeve.

3. A ball joint substantially as herein de-  
scribed and with reference to the accompany-  
ing drawing.

H. A. L. VENNER,  
Chartered Patent Agent,  
Rugby Chambers,  
2, Rugby Street,  
London, W.C.1.

1067426 COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of  
the Original on a reduced scale*

